Bradley Units Ready for Training with Modernized Conduct of Fire Trainer

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In 1980, shortly after the fielding of the M2/M3 Bradley fighting vehicle (BFV), the Army fielded each mechanized infantry battalion and cavalry squadron a Conduct Of Fire Trainer (COFT). The COFT is a high fidelity simulator that replicates the BFV turret switches, controls, and weapons systems. Housed in a self-contained shelter, the simulated turret provides a Bradley crew with a virtual battlefield, containing multiple targets and an appropriate environment without the need to deploy to the field. The COFT virtual world is run by an Instructor/Operator (IO); he controls the device and provides the crew with feedback on how to improve their gunnery skills. Training new commanders and gunners would be very costly and potentially dangerous if it had to be accomplished using live ammo. Prior to heading out to the range the IO can get the individual or crew in the COFT and train him/them until they are comfortable in the operations of the turret and crew coordination. Using special purpose exercises, the IO can cover tasks in the Bradley ranging from zeroing the weapon to advanced gunnery skills. The Instructor/Operator is the cornerstone to training; he must be proficient in gunnery skills to coach crews in gunnery techniques needed to be effective. However, the tool he has used for the last quarter of a century is beginning to show its age. Therefore, the COFT is finally getting a long overdue upgrade or Recapitalization (ReCap).

The Bradley has been in service for 25 years, and the COFT has been with units most of that time. While the Bradley has evolved through five variants, the only update to the COFT was to align it with the changes that appeared in the Operation Desert Storm (ODS) version. This occurred in the mid-1990s and added the laser range finder and the Bradley Advanced Matrix (BAM). When the COFT was initially developed, it was cutting edge technology, but today its parts can only be found in computer museums.

In 2002, the Bradley Program Manager assembled a team to assess the condition of the gunnery trainers in the field. They found systems requiring a tremendous amount of man-hours to keep them operational along with a shortfall in parts due to obsolescence. Field Service Representatives (FSR) deserve a note of thanks for the effort they have provided to keep these systems operational through the years, constantly moving from trainer to trainer repairing systems to maintain a 90-percent operational rate. Units were also sharing the burden in upkeep. During a visit to one unit, the IO was found trading printer paper for printer cartridges.

In 2003, the ReCap began with United Defense (UD) removing the 1970's vintage backplane hardware and FORTRAN software and replacing it with PCs and a Window/Linux based operating system. Originally, the COFT required three shelters: one for the training station, one to house the large processing unit and one connecting room that served as an after actions review (AAR) room. Now all of the hardware has been greatly reduced in size and is consolidated in the crew shelter. The IO station has been completely re-hosted with a stack of five PCs, 19-inch flat screen monitors and a laser printer. In addition to being more compact, the COFT is now far more efficient. Previously, the IO needed 20 to 30 minutes to power the COFT and had to move from the IO station to the computer shelter two times during this procedure, watching for indicators that the system was online prior to training. In the new system the IO powers up (two and a half minutes) and shuts down the system from the IO station, reducing preparation time and effort for the IO.

Another ReCap initiative for the COFT is a change to the training subsystem, making it common with the A-3 Bradley Advanced Training System (BATS). Changes in the training subsystem are:

- The preliminary matrix starts the crew with a fully operational system and malfunctions are introduced as they become more proficient.
- Random target generation prevents the same target from repeatedly generating at the same location.
- The IO has the capability to select a variety of target parameters, not just dusk to dawn as before, but rain and fog as well. This selection will cause the laser range finder to give inaccurate returns in the ODS version from

time to time, more accurately replicating vehicle characteristics in these conditions.

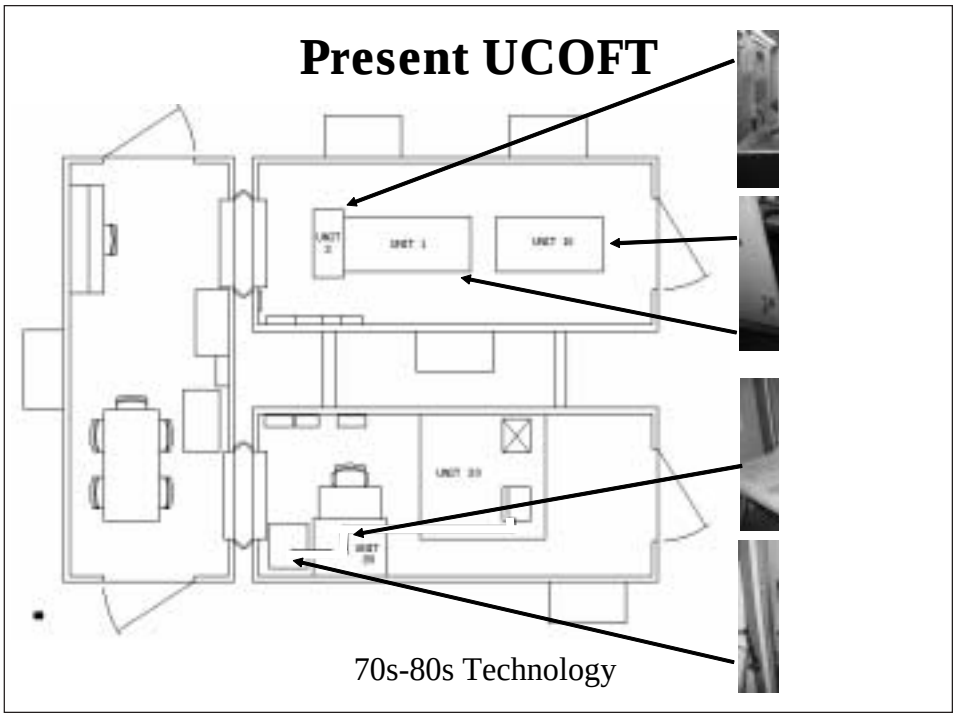
The final upgrade incorporated in the ReCap is record management. The system now allows the IO to print records on a laser printer and store them on a CD, permitting records to be transferred between COFT's instead of manually inputting each crew when switching systems.

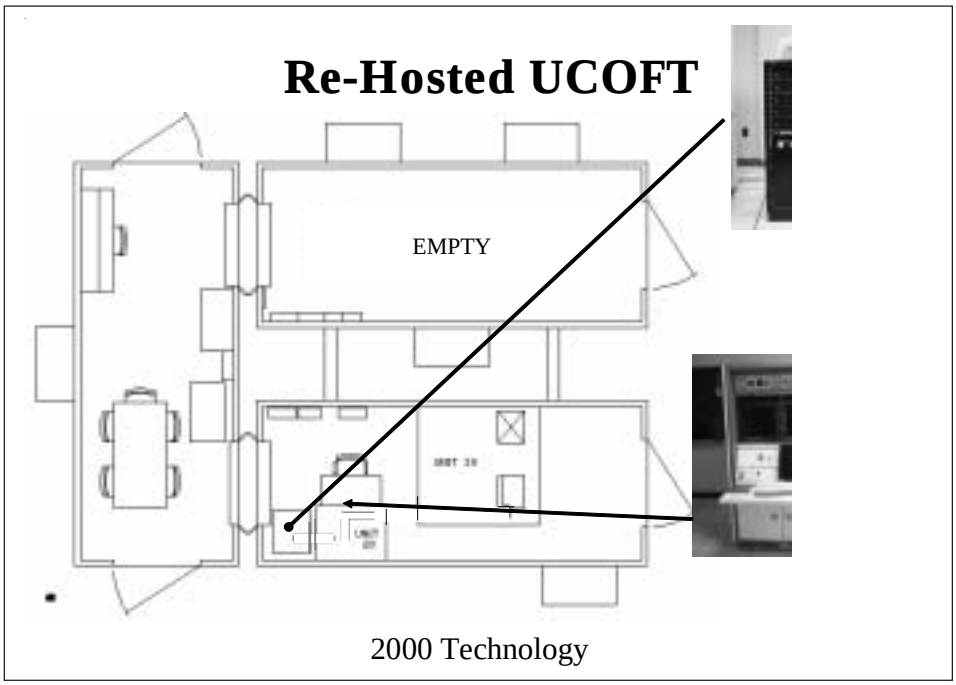
The fielding began in January 2005 and is projected to be completed by midsummer. The majority of initial comments from the first fielded installations at Forts Carson and Hood are positive. Sergeant First Class Montano, a brigade master gunner at Fort Carson said, "Training is more realistic and supports the current missions we face today, which will increase the quality of Bradley crews. Having the ability to set parameters to meet our commander's overall intent is the key to success. We train crews on proper manipulation of the turret weapons systems with limited resources; and the power up sequence maximizes training time, which helps the quality of the training. Overall, I'm very pleased with the system," he said.

Montano also noted that making a crew pull forward in a position to fire the TOW needs to be changed to allow firing from the defilade (This change will be implemented in future upgrades).

Another comment was from a brigade master gunner at Fort Hood. Staff Sergeant Grant said, "This is a much needed change to enable our crews to get the training they need prior to deployments. Giving the commander the capability to change target parameters will greatly enhance training. The COFT has been in bad shape for years; it's a vast improvement." Grant compared it to the Bradley Advanced Training System (BATS) for ease of use.

Yet more good news for the COFT is that these updates are not the end of the modernization effort. Now that the hardware is up to date, in the next 12 months COFTs will incorporate an Urban Operations (UO) database and several facets of the contemporary operating environment (COE). This will provide the commander the capability to introduce noncombatants, civilian vehicles, and various other unique target types into scenarios. Moving forward, the Program Executive Office for Simulation Training and Instrumentation (PEO STRI) is pursuing a Common Gunnery Architecture (CGA) for simulators across the Bradley and tank force. This will make changes and updates less costly while maintaining a common standard across the force. The CGA will also provide the capability to edit or create scenario's beyond using the select by content.





The Bradley COFT has been in the field for a long time and was well overdue for an upgrade. This upgrade and its planned enhancements will provide Soldiers a much needed, new and improved capability. The Bradley will be with us for many years to come, and now the primary gunnery training device will be postured to support Soldiers during the years to come.

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